

## REMARKS

This amendment is responsive to the July 20, 2005 final Office Action. In the Office Action, Examiner Ly Cheyne:

- objected to pages 12, 13, and 23 of the specification because it contains embedded hyperlinks and/or other forms of browser-executable codes;
- rejected claims 14, 15, 17, 20-22, 39, 40, 42, 45-47, and 58 under 35 U.S.C. § 112, second paragraph, on three grounds: (i) lack of clarity in the antecedent basis for the phrase “the correlation value” (e.g., line 17 of claim 14), (ii) lack of clarity in the antecedent basis for the phrase “the property” in the independent claims and, (iii) lack of antecedent basis for the phrase “an associated correlation value” in the independent claims;
- rejected claims 14, 15, 17, 20-22, 39, 40, 42, 45-47, and 58 under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement for reciting in the independent claims the phrases: (i) “the one or more genotypic data structures has the property that that the correlation value associated with the respective genotypic structure” and, (ii) “plurality of genotype data structures that are not in said one or more genotypic data structures” are allegedly not found in the specification; and
- rejected claims 14, 15, 17, 20-22, 39, 40, 42, 45-47, and 58 under 35 U.S.C. § 101 because the claimed invention is allegedly directed to non-statutory algorithm type subject matter.

With this amendment, claims 14, 15, 17, 20, 22, 39, 42, 45-47, and 58 have been amended for clarity. In addition, URLs in the specification have been amended in such a manner that they have been deactivated. No new matter has been added by virtue of these claim amendments or the amendments to the specification. Upon entry of the present amendments, claims 14, 15, 17, 20-22, 39, 40, 42, 45-47, and 58 will remain pending in the above-identified application.

## JANUARY 12, 2006 ADVISORY ACTION

On December 19, 2005, Applicants filed a response to the July 20, 2005 Final Office Action (hereinafter, “Response”). In a January 12, 2006 Advisory Action, Examiner DeJong stated that the Response raised new issues that would require further consideration and/or search. Thus, the Examiner did not enter the Response. However, the Examiner provided

extensive comments in the Advisory Action that Applicants respectfully summarize in an effort to move the above-identified case toward allowance.

*35 U.S.C. § 101 rejection.* Although the Response was not entered, the Examiner stated that the rejection of claims 14, 15, 17, 20, 22, 39, 42, 45-47, and 58 under 35 U.S.C. § 101 as being directed to non-statutory subject matter is withdrawn in view of arguments presented by Applicants. Accordingly, Applicants will not reiterate the 35 U.S.C. § 101 arguments made in the Response in this paper.

*35 U.S.C. § 112, second paragraph, rejection.* The Examiner stated that the Amendments made by Applicants in the Response, in light of the rejection of claims 14, 15, 17, 20, 22, 39, 42, 45-47, and 58 under 35 U.S.C. § 112, second paragraph, in the July 20, 2005 Final Office Action, would be sufficient to overcome the rejection. Applicants maintain these same claim amendments in the current paper on the basis that the Advisory action stated that such claim amendments are sufficient to overcome to the 35 U.S.C. § 112, second paragraph, rejection.

*35 U.S.C. § 112, first paragraph, rejection.* The Examiner stated that the Amendments made by Applicant in the Response in light of the rejection of claims 14, 15, 17, 20, 22, 39, 42, 45-47, and 58 under 35 U.S.C. § 112, first paragraph, in the July 20, 2005 Final Office Action, would be sufficient to overcome one such rejection of the claims. Specifically the Examiner stated that the amendments in the Response would be sufficient to overcome the 35 U.S.C. § 112, first paragraph, rejection of the phrase “the one or more genotypic data structures has the property that that the correlation value associated with the respective genotypic structure.” Applicants maintain these same claim amendments in the current response on the basis that the Advisory action stated that such claim amendments are sufficient to overcome to the 35 U.S.C. § 112, first paragraph, rejection.

*Objections and Rejections maintained in the Advisory Action.* The Advisory Action stated that the Response did not overcome the objection to the specification for containing browser-executable code. The Advisory Action further stated that the Response did not overcome the rejection under 35 U.S.C. § 112, first paragraph, for reciting the phrase “plurality of genotypic data structures that are not in said one or more genotypic data structures” in the independent claims.

## EXAMINER INTERVIEW

On February 1, 2006, Attorney for Applicants, Brett Lovejoy, held an Examiner Interview with Examiner DeJong to discuss the objections and Rejections maintained in the January 12, 2006 Advisory Action. Applicants wish to thank Examiner DeJong for the courtesies extended in the Examiner Interview.

*Objections to the Specification.* Examiner DeJong and attorney for Applicants discussed the objection to URLs present in the specification. Examiner DeJong explained that browser-executable code was not permissible in the patent application specification. Attorney for Applicants duly noted this explanation and, in the instant paper, amendments to the specification have been made to remove any recitation of the phrase “http://” or “www.” As such, Applicants believe the specification for the above-identified application no longer contains browser-executable code. Thus, Applicants respectfully request that this objection be withdrawn.

*Rejection of the claims under 35 U.S.C. § 112, First Paragraph.* Examiner DeJong and attorney for Applicants also discussed the rejection of claims 14, 15, 17, 20, 22, 39, 42, 45-47, and 58 under 35 U.S.C. § 112, first paragraph, for reciting the phrase “plurality of genotypic data structures that are not in said one or more genotypic data structures” in the independent claims. Attorney for Applicants explained that there was written support for this phrase in the specification. Examiner DeJong agreed with Attorney for Applicants on this issue. Agreement on this issue is noted in the February 3, 2006 Interview Summary prepared by Examiner DeJong in which it is noted that the proposed amendment in the Response would be sufficient to overcome the written description rejection of record. Applicants maintain these same claim amendments in the current paper on the basis that the February 3, 2006 Interview summary stated that such claim amendments are sufficient to overcome to the 35 U.S.C. § 112, first paragraph, rejection.

*No outstanding rejections of record.* Thus, between the January 12, 2006 Advisory Action and the February 3, 2006 Interview Summary, the Examiner has stated that each of the rejections of record would be overcome if the Response were entered. Accordingly, herewith, Applicants have filed a Request for Continued Examination and this paper, which includes the same claim amendments and arguments found in the Response. In particular, this paper is identical in form with respect to arguments raised in the July 20, 2006 Office Action and with respect to claim amendments made in the original response to the July 20, 2006 Office Action. Thus, Applicants expect that entry of the current paper (response) will

remove all outstanding rejections and objections in the above-identified case. In view of the fact that the Examiner has acknowledged that all the outstanding claim rejections have been addressed and in further view of the extended examination this case has received over the past four years, including four office actions and a restriction requirement, Applicants respectfully request that the application proceed to allowance. Early indication of the same is earnestly sought.

**THE OBJECTIONS TO THE SPECIFICATION SHOULD BE WITHDRAWN**

In the July 20, 2005 Office Action, the Examiner objected to embedded hyperlinks that appear on pages 12, 13, and 23 of the specification. In response, Applicants have amended these hyperlinks in such a manner that they are inactivated. Applicants have stripped the “http://” and “www” designation from each of the links. In this way, the specification still discloses the hyperlink addresses, but does so in a manner that will not accidentally lead to active hyperlinks in the specification when the patent application issues and is published on the USPTO web site. Accordingly, Applicants request that the objection to the specification be withdrawn.

**THE 35. U.S.C. § 112 SECOND PARAGRAPH REJECTION SHOULD BE  
WITHDRAWN**

The Examiner has rejected claims 14, 15, 17, 20-22, 39, 40, 42, 45-47, and 58 under 35 U.S.C. § 112, second paragraph, for lack of antecedent basis of the phrase “the correlation value associated with the respective genotypic data structures” in independent claims 14, 17, 20, 22, 39, 42, 45-47, and 58. Claims 15, 21, and 40 are rejected for being dependent from rejected claim 14, 20, or 39. In response, Applicants have amended each of these independent claims in the same manner. As an example, claim 14 has been amended in relevant part as follows:

repeating said establishing and determining steps for each locus in said plurality of loci, thereby establishing a plurality of genotypic data structures and, for each respective genotypic data structure in the plurality of genotypic data structures, an associated determining a correlation value;

identifying one or more genotypic data structures in said plurality of genotypic data structures, wherein the correlation value for each respective genotypic data structure in the one or more genotypic data structures has the property that the correlation value associated with the respective genotypic

~~data structure forms is a high correlation value relative to the correlation values of genotypic data structures in said plurality of genotypic data structures that are not in said one or more genotypic data structures; wherein the loci that correspond to said one or more genotypic data structures represent said one or more candidate chromosomal regions that associate with said phenotype and wherein an amount of said genome that is included in each locus in said plurality of loci is predetermined;~~

Each of the independent claims has been amended in this manner.

With the above-described claim amendments, it is now clear that the repeating step of each of the independent claims causes a correlation value to be determined for each genotypic data structure in a plurality of data structures. The claimed repeating step is supported by Fig. 2 of the specification, in particular steps 206 and 208 coupled with the step 212 of Fig. 2. In steps 206 and 208 a genotypic data structure is established and a correlation value is determined for the genotypic structure data structure as described in the specification, for example, on page 23, line 16, through page 26, line 16. Step 212, the repeating step in which the establishing and determining steps are repeated for a different genotypic data structure, is described, for example, in the specification on page 26, line 21, through page 27, line 15. Thus, in each of the independent claims, as amended, a correlation value is determined for each genotypic data structure in a plurality of genotypic data structures by operation of the repetition of the establishing (Fig. 2, step 206) and determining steps (Fig. 2, step 208) in the same manner illustrated in Fig. 2 of the specification.

The identifying step of each of the independent claims is supported by steps 214 and 216 of Fig. 2 of the specification. Steps 214 and 216 are described, for example, on page 27, line 26, through page 27, line 17, of the specification. Here, consistent with the independent claims as amended, the specification teaches that genotypic data structures that have high correlation values are selected.

The Examiner has further rejected claims 14, 15, 17, 20-22, 39, 40, 42, 45-47, and 58 under 35 U.S.C. § 112, second paragraph, for lack of antecedent basis for reciting the phrase “the property” in independent claims 14, 17, 20, 22, 39, 42, 45-47, and 58. Claims 15, 21, and 40 are rejected for being dependent from rejected claim 14, 20, or 39. In response, Applicants have amended these independent claims to cancel the phrase “the property” and to amend the phrase “the associated correlation value” in favor “determining a correlation value.”

In view of the above-identified claim amendments, Applicants believe that each of the 35 U.S.C. § 112, second paragraph, rejections raised by the Examiner have now been obviated. Accordingly, Applicants respectfully request that the 35 U.S.C. § 112, second paragraph, rejection of the pending claims be withdrawn.

**THE 35. U.S.C. § 112 FIRST PARAGRAPH REJECTION SHOULD BE  
WITHDRAWN**

The Examiner has rejected claims 14, 15, 17, 20-22, 39, 40, 42, 45-47, and 58 under 35 U.S.C. § 112, first paragraph, for allegedly failing to comply with the written description requirement. In particular, the Examiner contends that the claim limitation “the one or more genotypic data structures has the property that the correlation value associated with the respective genotypic data structure” is not found in the instant specification. Applicants have amended this claim limitation in the manner described above in the section addressing the 35 U.S.C. § 112, second paragraph, rejections. Specifically, the following claim amendment has been made:

wherein the correlation value for each respective genotypic data structure in the one or more genotypic data structures has the property that the correlation value associated with the respective genotypic data structure forms is a high correlation value relative to the correlation values of genotypic data structures in said plurality of genotypic data structures that are not in said one or more genotypic data structures

This claim limitation, as amended, is supported by steps 214 and 216 of Fig. 2 of the instant specification. Steps 214 and 216 are described, for example, on page 27, line 26, through page 27, line 17, of the specification. Here, consistent with the independent claims as amended, the specification teaches that genotypic data structures that have high correlation values are selected. Additional support for this claim limitation is found on page 5, lines 1-10 of the specification reproduced for the Examiner’s convenience:

The phenotypic and genotypic data structures are then compared to form a correlation value. The process continues with the establishment of another genotypic data structure that corresponds to a different loci and the concomitant comparison of this genotypic data structure to the phenotypic structure until several of the loci in the genome of the organism have been tested in this manner. In this way, one or more genotypic data structures are identified that form a high correlation value relative to all other genotypic data

structures that have been compared to the phenotypic data structure. Further, the loci in the genome of the organism that correspond to the highly correlated genotypic data structures represent one or more candidate chromosomal regions that may be associated with the phenotype of interest.

This claim passage illustrates how one or more genotypic data structures are identified that each form a high correlation value relative to all other genotypic data structures, consistent with the limitation identified by the Examiner. Thus, Applicants contend that the claim limitation identified by the Examiner is fully supported by the specification in its amended form.

The Examiner has rejected claims 14, 15, 17, 20-22, 39, 40, 42, 45-47, and 58 under 35 U.S.C. § 112, first paragraph, on the additional basis that the claim limitation “plurality of genotype data structures that are not in said one or more genotypic data structures” is not found in the instant specification. Applicants have not amended this claim limitation in the instant response because Applicants respectfully disagree with the Examiner on this point. A plurality of genotypic data structures are established in the instant application and in each of the independent claims. This plurality of genotypic data structures is then divided into two classes: (i) the identified one or more genotypic data structures that have high correlation values and (ii) those genotypic data structures in the plurality of genotypic data structures that are not in the identified one or more genotypic data structures (*i.e.*, that do not have high correlation values).

Applicants have noted several passages in the specification where it is clear that one or more genotypic data structures are selected from a plurality of genotypic data structures. For example, on page 5, lines 1-10, of the specification, reproduced above, “one or more genotypic data structures are identified that form a high correlation value relative to all other genotypic data structures that have been compared to the phenotypic data structure.” This claim limitation is further supported by step 216 of Fig. 2. Page 28, lines 8-9, of the specification states that, in processing step 216, the genotypic data structures that achieve the highest correlation values are selected. The specification makes it very clear that these genotypic data structures that achieve the highest correlation values are relative to those genotypic data structures not selected. For example, on page 28, lines 12-14, the specification states that “[i]n one embodiment, the selection process in processing step 216 is performed by selecting genotypic data structures that form a correlation value that is a predetermined number of standard deviations above the mean correlation value.

In view of the above-identified claim amendments, Applicants believe that each of the 35 U.S.C. § 112, first paragraph, rejections raised by the Examiner have now been obviated. Accordingly, Applicants respectfully request that the 35 U.S.C. § 112, first paragraph, rejection of the pending claims be withdrawn.

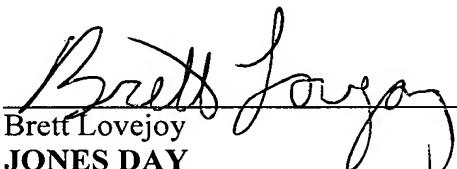
### CONCLUSION

In view of the above remarks, Applicants respectfully submit that the subject application is in good and proper order for allowance. Withdrawal of the Examiner's rejections and objections and early notification to this effect are earnestly solicited.

No fee is believed owed in connection with filing of this amendment and response. However, should the Commissioner determine otherwise, the Commissioner is authorized to charge any underpayment or credit any overpayment to Jones Day Deposit Account No. 50-3013 for the appropriate amount. A copy of this sheet is attached.

Respectfully submitted,

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